

## EXECUTIVE SUMMARY

### INTRODUCTION

Groundwater resources have long played a significant role in the development, growth and sustainability of the Sonoma Valley, with more than half the water demand in a given year met by local groundwater resources. With continuing and increasing demand on finite local groundwater supplies, overall groundwater storage in the Sonoma Valley has been and will continue to be depleted without appropriate actions in the near future. This voluntary, non-regulatory Sonoma Valley Groundwater Management Plan (Plan) identifies a range of water management actions to sustain resources for future generations. ***The goal of the Plan is to locally manage, protect, and enhance groundwater resources for all beneficial uses, in a sustainable, environmentally sound, economical, and equitable manner for generations to come.***

The Plan has been prepared under the authority of the Groundwater Management Act Water Code § 10750 *et seq.*, originally enacted as Assembly Bill (AB) 3030, to encourage voluntary groundwater management at the local level, subsequently modified under Senate Bill (SB) 1938 which mandated that all water agencies adopt or participate in a groundwater management plan to be eligible for state funds for groundwater projects. The Plan was developed in coordination with the Sonoma County Water Agency (Agency), the Valley of the Moon Water District (VOMWD), and City of Sonoma (City) under a collaborative and cooperative process that also included a broad range of stakeholders who live in the Sonoma Valley. Stakeholders were represented on a Basin Advisory Panel (PANEL), which met monthly and directed the preparation of the Plan.

The Plan area (Figure ES-1), referred to as the Sonoma Valley, is the Sonoma Creek Watershed. The Sonoma Valley is approximately 166 square-miles in size, and is bounded by Sonoma Mountain to the west, the Mayacamas Mountains and Mount Hood to the east and north, and San Pablo Bay to the south.

### PROBLEM STATEMENT

In 2001, the Agency's Board authorized an agreement with the United States Geological Survey (USGS) to develop a cooperative study to characterize major groundwater basins in Sonoma County. The study estimated that pumping in the Sonoma Valley has generally increased from approximately 6,200 acre-feet per year (AF/yr) in 1974 to 8,500 AF/yr in 2000, a 37 percent increase in pumping. The USGS also estimated on the basis of groundwater flow modeling, that during the period 1975 to 2000, 17,300 AF were lost from overall groundwater storage. As a result, the Sonoma Valley has been experiencing localized declining groundwater levels in some areas, and potential groundwater quality problems from seawater intrusion and geothermal upwelling.

### WATER RESOURCES SETTING

#### Water Supply

The Sonoma Valley relies on groundwater and imported surface water to meet domestic, agricultural and urban demands. Based on the USGS study (2006), in 2000 more than half the water demand was met with groundwater (57 percent), followed by imported water (36 percent), with the remaining demand met from recycled water (7 percent), and local surface water (not quantified (Figure ES-2)).

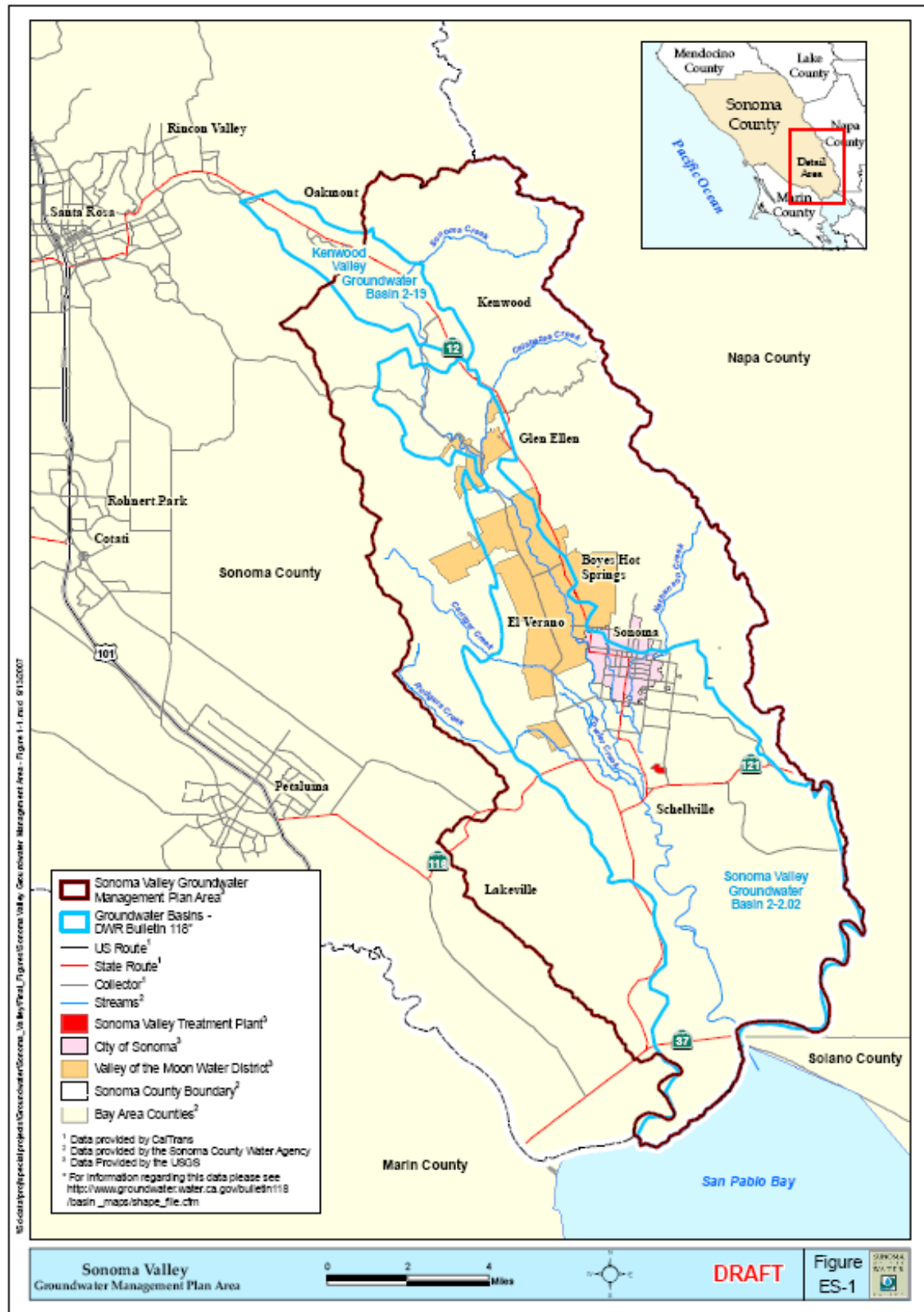


Figure ES-1. Sonoma Valley Plan Area.

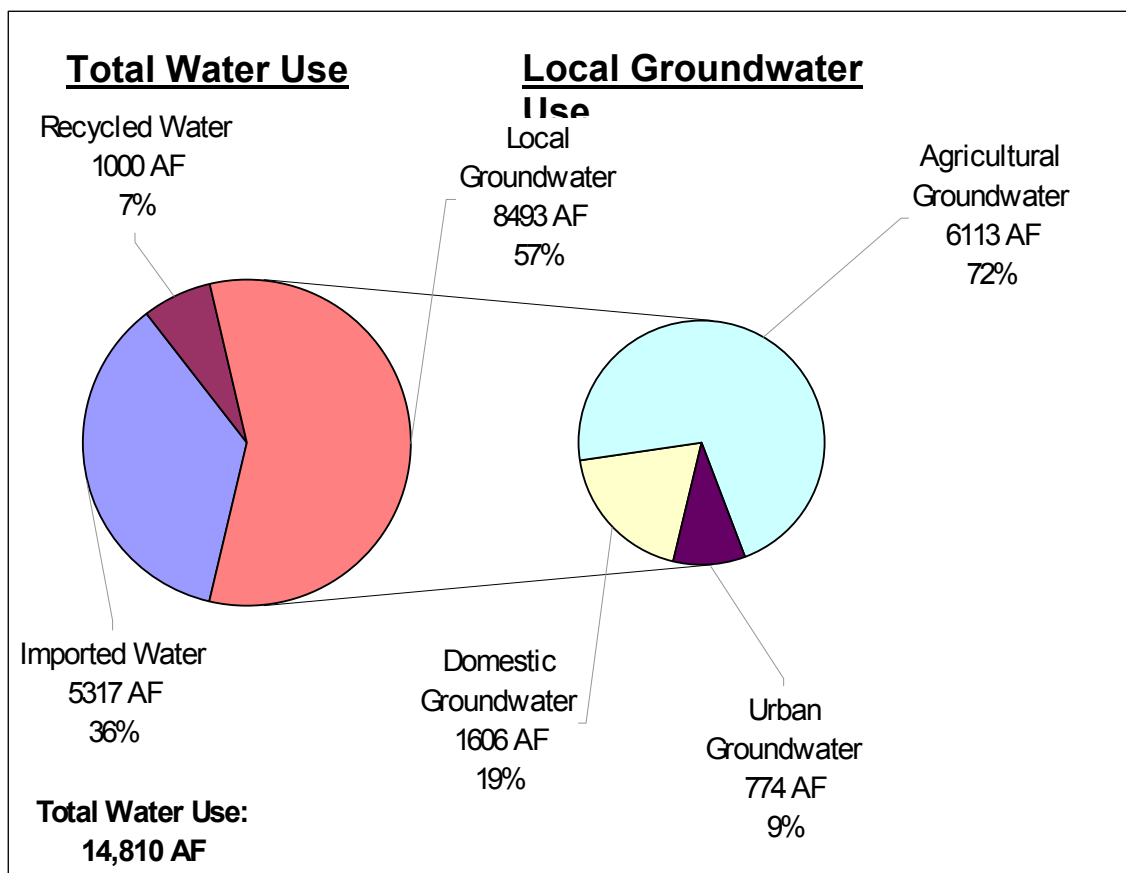


Figure ES-2. Sonoma Valley Water Supply for Year 2000.

Note: acre-feet per year (AF). One AF is equal to 325,800 gallons or the approximate amount of water needed to cover a football field one foot deep.

The largest use of **groundwater** in the Sonoma Valley in 2000 was for irrigation (72 percent), followed by rural domestic use (19 percent), and urban demand was the third largest (9 percent). For the year 2000, **total water use** in the Sonoma Valley, including groundwater and imported water, was estimated at 14,810 AF, with 48 percent for irrigation, 41 percent for urban use, and the remaining 11 percent for rural domestic use.

**Groundwater** is the primary supply for approximately 25 percent of the Sonoma Valley population and is the sole source of drinking water supply for rural domestic and other unincorporated areas not being served by urban suppliers. Rural domestic demand is met by groundwater extracted from privately owned and operated wells. There are also mutual water companies in the Sonoma Valley that supply domestic water to multiple households mainly with groundwater, although some companies also use imported water. Agricultural water demands are largely met by Sonoma Valley groundwater supplies.

**Imported water**, the primary source of drinking water to meet urban demands, serves approximately 75 percent of the Sonoma Valley population. Imported water supplies from the Russian River are provided via aqueduct by the Agency to the VOMWD and the City, who in turn provide water directly to their urban customers. The imported water is

supplemented in dry years with local groundwater from the City's and the VOMWD's public supply wells.

One of the key elements in meeting the future urban water demands is the strategy to increase imported water supply. The Agency is in the process of obtaining additional water rights, and if successful, there should be an increase of imported water into the Sonoma Valley to VOMWD and the City by 2016 to help meet the increase in urban water demands. Until that time, the City and VOMWD plan to increase their Sonoma Valley groundwater use to meet their projected increasing demands.

## **GROUNDWATER MANAGEMENT PLAN ELEMENTS**

The elements of this groundwater management plan prepared by the PANEL include Basin Management Objectives and program components and actions to meet the goal and objectives. Modeling results provide the basis for the components and action items to implement the Plan.

### **Plan Basin Management Objectives (BMOs)**

The following ten BMOs provide the foundation for the Plan, to achieve the Plan's goal, as state on page 1:

- BMO-1 Maintain groundwater elevations for the support of beneficial uses of groundwater and to protect against inelastic land subsidence.
- BMO-2 Improve water use efficiency and conservation.
- BMO-3 Identify and protect groundwater recharge areas and enhance the recharge of groundwater where appropriate.
- BMO-4 Manage groundwater in conjunction with other water sources.
- BMO-5 Protect groundwater quality for beneficial uses including minimizing saline intrusion.
- BMO-6 Protect against adverse interactions between groundwater and surface water flows.
- BMO-7 Improve the community's awareness of groundwater planning, water resources, and legal issues.
- BMO-8 Improve the groundwater database and basin understanding through consistent monitoring and additional surveys, and improve basin analytical tools including the groundwater simulation model.
- BMO-9 Manage groundwater with local control.
- BMO-10 Explore, identify and maximize non-regulatory approaches to manage the groundwater resource.

### **Groundwater Model Forecasts**

To supplement previous USGS modeling, additional groundwater modeling analyses were completed to evaluate the effects of increasing demands on groundwater for the period 2001 - 2030. Additional modeling analyzed normal and dry year weather scenarios. Given uncertainty surrounding the timing and availability of additional imported water from the Russian River, the modeling analyzed both an increase in imported water as well as static supplies of imported water. The static imported supply scenarios were developed to represent the worst-case estimate of future supplies.

Based on the modeling, rural domestic, agricultural and urban groundwater use in the Sonoma Valley is projected to increase from an estimated total of 8,500 AF/yr in 2000 to an estimated 10,100 to 11,300 AF/yr in 2030, with and without an increase in imported

water supplies, respectively. This increased demand on groundwater is estimated to result in a reduction of approximately 16,000 to 22,000 acre-feet from storage in the groundwater basin. The losses from overall groundwater storage will likely result in lower groundwater levels, and cause various associated potential adverse impacts such as increased extraction costs, possible well deepening or replacements costs, possible groundwater quality degradation including salinity intrusion, potential land subsidence, decreases in streamflow, and environmental damage. The modeling results provide the rationale and basis for groundwater management actions to be implemented in the Sonoma Valley.

The modeling results are shown below in Figure ES-3. In summary, only Scenarios A, B, and C resulted in an increase in groundwater storage within the Basin. Plan components and actions that achieve the most storage have been prioritized by the PANEL.

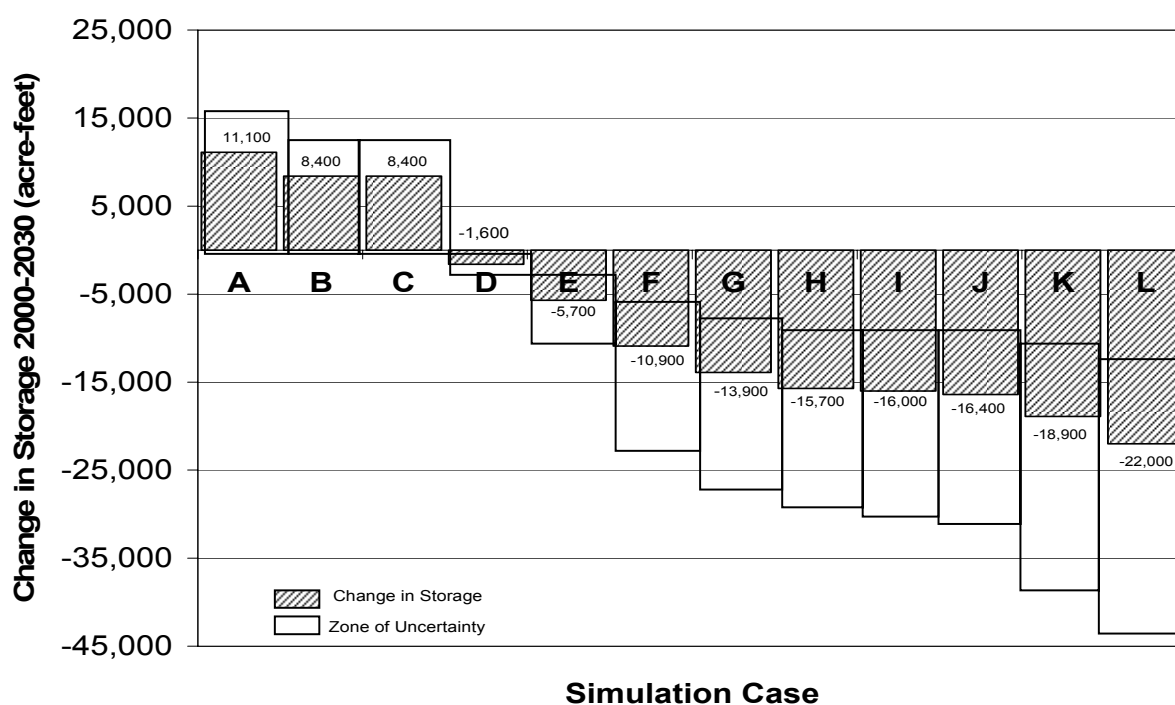


Figure ES-3. Simulated Change in Groundwater Storage in Acre Feet in the Sonoma Valley for the 12 Simulation Cases for the period 2001 - 2030:

- A) Additional imported water, all groundwater sustainability options implemented, normal weather year scenario.
- B) Additional imported water and all options implemented, dry weather year scenario.
- C) All options implemented, normal weather year scenario.
- D) Only groundwater banking implemented, normal weather year scenario.
- E) Additional imported water, stormwater recharge, recycled water and conservation implemented, normal weather year scenario.
- F) Additional imported water, recycled water and conservation implemented, dry weather year scenario.
- G) Only conservation implemented, normal weather year scenario.
- H) Only recycled water implemented, normal weather year scenario.
- I) Additional imported water, no actions, normal weather year scenario.
- J) Only stormwater recharge implemented, normal weather year scenario.

- K) No actions, normal year weather scenario.
- L) No actions, dry year weather scenario.

**Plan Component Actions**

Plan Component Actions seek to attain groundwater sustainability and achieve the Plan Goal and BMOs. While recommending implementation of all components, the PANEL prioritized Groundwater Sustainability and Groundwater Quality Protection as components that would best achieve the Plan Goal and BMOs.

*Groundwater Sustainability* - The Plan seeks to attain groundwater sustainability by pursuing the following actions: 1) stormwater recharge, 2) groundwater banking, 3) increased use of recycled water to offset groundwater pumping, and 4) increased conservation and other demand-reduction measures.

*Groundwater Quality Protection* - Groundwater quality protection is critical to ensure a sustainable groundwater resource. Groundwater quality protection includes: 1) strategies to prevent and minimize contamination in the Sonoma Valley basin, and 2) mitigation of existing contamination including saline water intrusion.

*Monitoring Program* - A robust monitoring program should be capable of assessing the current status of the Sonoma Valley and predicting responses in the basin as a result of future management actions or inaction. The Plan includes actions to:

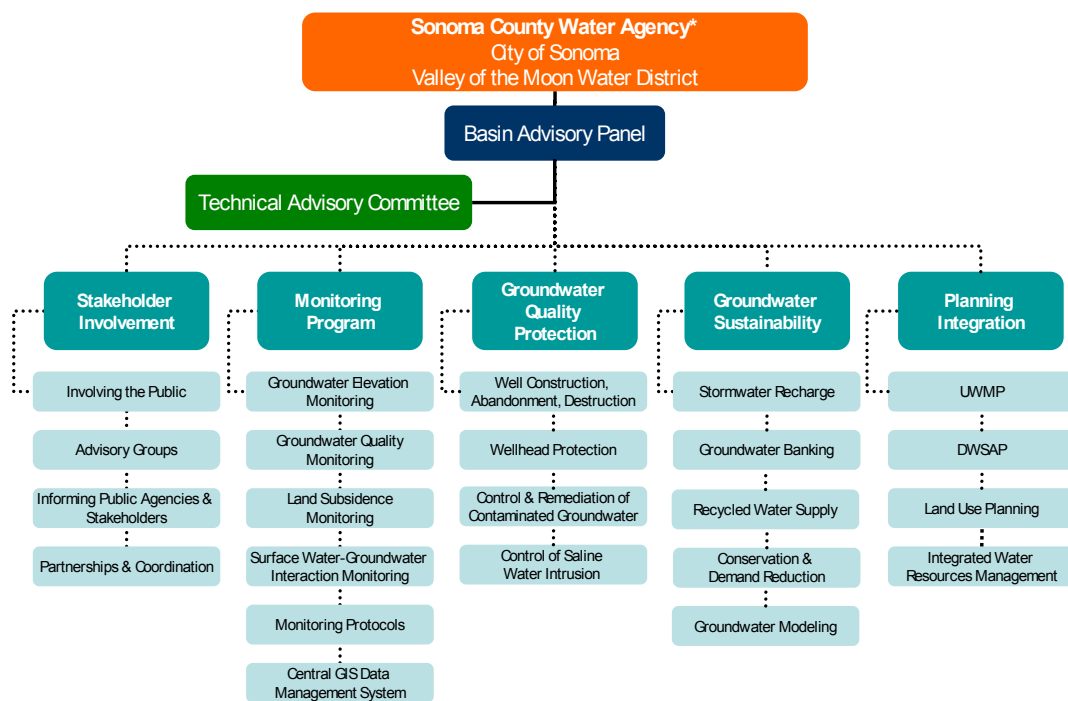
- Monitor groundwater elevations and groundwater quality;
- Monitor potential land surface subsidence resulting from groundwater extraction;
- Understand the relationship between surface water and groundwater along Sonoma Creek;
- Adopt monitoring protocols; and
- Maintain a central data management system of monitoring information and improve computer models.

*Planning Integration* - Integrating water management planning on a regional scale is critical. Planning integration includes coordinating and incorporating existing urban water management plans, drinking water source assessment and protection program plans, land use planning issues through local and county plans, and other planning documents that have been or will be developed in the valley. These include an integrated water resources management plan underway and the Sonoma Creek Watershed Enhancement Plan.

*Stakeholder Involvement* - Several means of achieving broad stakeholder participation in the management of the Basin will be used, including: 1) PANEL meetings 2) public outreach, 3) public agencies & stakeholder briefings, and 4) partnership opportunities.

**Plan Implementation**

Implementation of the Plan is structured to encourage an open, collaborative and cooperative process for groundwater management activities and to maximize coordination of the many actions envisioned by the PANEL in the coming years. Plan studies, projects, and programs will be conducted under the Agency as the lead, with guidance from the PANEL and a supporting Technical Advisory Committee (Figure ES-4). The preliminary implementation schedule is based on the priorities that the PANEL identified during preparation of the Plan, which includes the Groundwater Sustainability and Groundwater Quality Protection components.

**Notes:**

\*Lead agency

UWMP – Urban Water Management Plan

DWSAP – Drinking Water Source Assessment and Protection Program

The Technical Advisory Committee (TAC) will include members from the Basin Advisory Panel (BAP) and other entities and will report to the BAP.

Figure ES-4. Plan Action Implementation Organizational Chart.

**Plan Funding**

Funding implementation is anticipated from a variety of sources including the Agency, funding and/or in-kind services by member agencies, state or federal grant programs, and partnerships at the local, state, and federal level. Stakeholder Involvement and the Monitoring Program form the foundation for the Plan, and are required Plan components under the Water Code to be eligible for state funds for groundwater projects.

The Groundwater Quality Protection, Groundwater Sustainability, and Planning Integration components contain many more planned actions that are not funded and will require study, data, feasibility analysis and pre-design before funding can be obtained. Implementation of many of these actions, including significant projects such as groundwater banking and stormwater recharge, are probably a minimum of 3 to 5 years in the future, and will depend on obtaining funding.

**Annual Plan Implementation Reporting and Future Review**

The Agency will describe implementation progress in an annual report that summarizes the groundwater conditions in the Sonoma Valley. The Plan is a living document that will continually evolve as more information about Sonoma Valley water resources and hydrogeology becomes available. The Agency or PANEL may identify additional actions as the Agency continues to evaluate how well all of the actions and objectives are meeting the overall Plan Goal over time.

**Reference:** U.S. Geological Survey (USGS). (2006). Geohydrological Characterization, Water-Chemistry, and Ground-Water Flow Simulation Model of the Sonoma Valley Area, Sonoma County, California, USGS Scientific Investigations Report 2006-5092.